NASA'S MISSION TO PLANET EARTH

EARTH PROBES

DATA INFORMATION SYSTEM
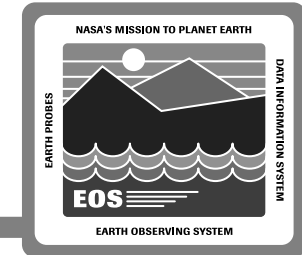
EOS

EARTH OBSERVING SYSTEM

Developed Software Estimates - SLOC
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19 January 1995

Estimated SLOC Effort - CSMS

General

- **SLOC estimates represent:**
  - **Delivered custom software, by release**
  - **Includes: C++, 4GL, scripting**
- **CSMS software for IR-1 and Release A is ~ 97% COTS**
- **Custom software development is provided to:**
  - **Enhance COTS products to meet CSMS functional requirements**
  - **Integrate COTS and/or public domain S/W with custom software (glue code)**
  - **Satisfy functional and performance requirements not met by COTS**

Release	IR-1		Rel. A		Rel. B		Rel. C		Rel. D		Total	
	SDR	PDR	SDR	PDR	SDR	PDR	SDR	PDR	SDR	PDR	SDR	PDR
CSS	36	13	49	43.5	82	47	36	69	19	29	222	201.5
MSS	2	4.5	15	23.5	34	30	11	23	8	8	70	89
Total	38	17.5	64	67	116	77	47	92	27	37	292	290.5

SLOC Estimates, in KLOC, for CSMS through Release D, SDR vs. PDR
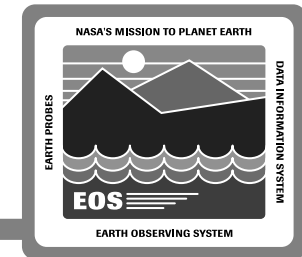
Estimated SLOC Effort - CSMS (cont.)

CSS

- **Of the estimated total lines of code used to implement CSS, IR-1 is ~99% COTS; Release A is ~97% COTS**

- **Since SDR, overall line of code estimates for IR-1 and Release A have decreased due to:**
  - **Decision to use OODCE as DCE Encapsulation method**
  - **Refinements to SDPS and FOS service needs for IR-1**

MSS

- **Since SDR, overall line of code estimates for IR-1 and Release A have Increased due to:**
  - **Identification of additional code required for management framework customization, extensible agents, history log access and management, and custom reporting for DBMS**
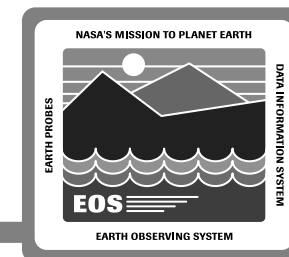
Estimated SLOC - CSMS IR-1

Build	Thread	SLOC
Mgmt Framework	Alarm Processing and Display	3,000
Mgmt Framework	Configuration Management	500
Mgmt Framework	Event Logging	0
Communications	File Transfer	0
Communications	Internet Messaging	2,000
Communications	Internetworking	500
Communications	DCE Encapsulation	2,500
Communications	Secure Logon/Logoff	3,000
Communications	Basic Directory Service	2,000
Communications	Distributed Time Service	2,000
Communications	Basic Interprocess Communications	1,000
Communications	Process to Process Communications	1,000
Communications	External Interfaces	0
	Total	17,500

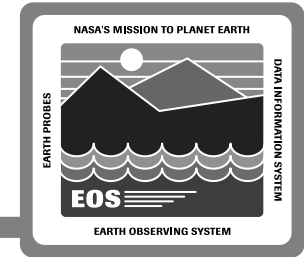Note: Estimates are for developed software only, although all thread tests include COTS software

Estimated SLOC - CSMS Release A

Build	Thread	SLOC
Comm Services	Internetworking	0
Comm Services	GUI-Based Session	0
Comm Services	Directory Naming Service	5,500
Comm Services	Distributed File Service	6,500
Comm Services	E-Mail/BBS	1,500
Comm Services	PGS Toolkit Interface	0
Mgmt Services	System Logistics Mgmt	1,500
Mgmt Services	Performance Mgmt	12,000
Mgmt Services	Fault Mgmt	11,500
Mgmt Services	Accountability Mgmt	8,500
System Security	Security Mgmt	9,000
System Security	Network Security	0
Mgmt Services		1,500
Comm Services		9,500
	Total	67,000

Note: Estimates are for developed software only, although all thread tests include COTS software

Estimated SLOC Summary

- **Developed software effort represents small part of the delivered software provided by CSMS**

- **SLOC estimates for IR-1 have been substantially reduced by selecting a COTS product for DCE Encapsulation**

- **Release B estimates have been reduced by repositioning CORBA to Release C**